

The Effects of the Release of Quarterly Earnings Report on Itself Daily Returns of Listed Firm

Hongyu Hu

School of Economics, Jinan University, Guangzhou 510632, China

huhy@2018stu.jnu.edu.cn

Abstract

This article employ some financial indicators in quarterly earnings report and trading data of market to construct risk factors, which based on firm's characteristic such as the market size, relative value, and profitability, to explain the movement of abnormal returns of stocks during event window. Among the main results, it is found that risk factors fully explained the cross-sectional fluctuations of the actual return of stocks within estimate window, and the significance level (p-value) of the estimated intercepts of stocks mostly are higher than 0.1. It is contrerrary to our intuition that, among the event window, the expected cumulative abnormal returns of firms with smaller market capitalization and strong profitability are close to zero, and the cumulative abnormal returns of firms with larger capitalization and higher relative value are positive and significant.

Keywords

Abnormal Return; Multi-factor Model; Event Study; Chinese A-share Market.

1. Introduction

Corporate operating risks have some obscure effects on the actual returns of stocks, and quarterly earnings reports will disclose real operating conditions of firms. On the one hand, a large amount of literature examines the quantitative relationship between forecast errors and abnormal returns by comparing securities analysts' forecasted values of business conditions indicators with the actual values in earnings report announcements. Hand (1989) and Bernard et al. (1990) believes that the expected return of investors holding securities assets may be like a simple seasonal random walk (SRW) model, that is, the quarter income will be equal to the income of the same period at last year. Easley et al. (1987) further consider that the forecast accuracy of experienced investors is significantly lower than that of analysts, so it is rationally to believe that the information set of market investors are not as good as the data set used by institutional investors. Therefore, when we assume that a large number of market investors may hold beliefs similar to SRW, special events will bring significant abnormal returns. Mikhail et al. (1997) regressed abnormal returns on SRW and analyst forecast errors. The results show that compared with SRW forecast results, market investors value the forecasts made by professional analysts in institutions. Sen et al. (2001) obtained the result of the positive correlation between the absolute value of the SRW forecast error and the abnormal returns generated by the small transactions during the period of earnings report are released.

On the other hand, some researchers start from the attributes of the enterprise itself and analyze which firm characteristics may affect abnormal return. Daniel et al. (2001) takes the Japanese stock market as the research object and finds that compared with the US stock market, the expected returns stocks are more closely related to the company's book-to-market value ratio (B/M). it simply employs some corporate characteristics that the market capitalization and the level of relative value as the explanatory variables, and them is more powerful than the

risk factors of Fama-French Multi-factor model as explaining the changes in returns. Bessembinder et al. (2013) focus on the corporate attributes, after comparing and matching companies, it is found that idiosyncratic volatility, liquidity, return momentum and capital investment were also could explain a part of the changes in the cross-sectional returns of stocks, and the Buy-and-hold abnormal return (BHAR) could be harvested by the long-term buy-and-hold strategy.

This article believes that investors are rational and the market is efficient. The reasons that some portfolios could have abnormal returns different from zero during the event window is investors having valued certain corporate financial indicators when they making investment decisions. The strategy that chasing the rise and killing the fall will bring the phenomenon of price changes with the fluctuation of firm value. Once the financial status of a listed firm had changed, its market returns will also be adjusted accordingly. This article takes a unique approach to explain the abnormal returns brought by the release of earnings reports by using risk factors constructed from the changes of the financial indicators in the previous and current quarter standing the perspective of information adjustment, rather than searching for the variables as transaction volatility, return momentum, etc. This article also had considering that the issue of corporate heterogeneity, we classify listed companies on the two dimensions of profitability and relative value to observe the path of cumulative abnormal returns of grouped companies during the event window.

2. Methodology

2.1. Employ the Multi-factor Model to Explain the Changes in Stock Returns

The main research object of this paper is the abnormal returns of stocks in Chinese A-share market during the period of the quarterly earnings reports of firms were released. In order to observe the abnormal returns of stocks accurately, the expected returns of stocks needs to be calculated. We take the logarithm of the closing price of stocks, and make a first-order difference to it to get the stock's daily return, then we deduct the risk-free interest rate at the same from it. The Fama-French Multi-factor model proposed in Fama et al. (1993, 2015) could explain the changes in monthly portfolios returns in the US securities market. This paper employ four financial risk factors to explain the cross-sectional difference of the daily returns of stocks in Chinese A-share market. The model expression is,

$$R_{it} - R_{ft} = \mu_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + v_i VMG_t + r_i RMW_t + e_{it}. \quad (1)$$

Above formula contains four explanatory variables: market risk factor, size effect factor, relative value risk factor, and profitability risk factor. For the convenience of describe, at the following part we will use the factor MKT referring to the market risk. And we will run regression about equation (2) to explain the abnormal returns within the event window,

$$AR_{it} = \mu_i + Group + v_i VMG_t + v_i^s VMG_t \times Group + r_i^s RMW_t + r_i^s RMW_t \times Group + e_{it}. \quad (2)$$

2.2. The Calculation and Statistical Test of Abnormal Return

Abnormal return measures the impact of an unexpected event on the price of stocks share during the event window. We define the abnormal returns of stocks during the period of the quarterly earnings reports were released as the difference of the actual market returns and the predicted returns from model (1),

$$AR_{it} = R_{it} - E(R_{it}). \tag{3}$$

Due to factors such as investor expectations, market transaction costs, and information transmission delays, the impact of events at a certain moment on the value of company cannot be fully reflected in the changes in the self-returns of stocks. By calculating the cumulative abnormal returns during the event window could fully measure the comprehensive impact of the quarterly earnings report released on the returns of stocks,

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{it}. \tag{4}$$

Through the result of algorithm C-Lasso, we grouped the listed firms into two groups. The expected abnormal returns of each group could be obtained by formula,

$$\overline{AR}_{g,\tau} = \frac{1}{\hat{N}_k} \sum_{i=1}^{\hat{N}_k} \widehat{AR}_{it}, \tag{5}$$

where N is the number of stocks in a group. Add up the abnormal returns of grouped stocks in the period (τ_1, τ_2) to obtain the expected cumulative abnormal returns between groups,

$$\overline{CAR}(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \overline{AR}_{g,\tau}. \tag{6}$$

2.3. Data Resources

This article takes the listed firms in Chinese A-share market as data sample. The market transaction data and corporate accounting information come from Wind and CSMAR Database. Considering that the stock prices of newly listed companies fluctuate more intensely than the market average, we excluded these companies from the sample in order to avoid the interference of various conditions of firm as much as possible. In addition, the China Banking Regulatory Commission stipulates that Chinese A-share listed companies need to release performance forecasts when some major changes happened in their operating conditions, in order to prevent the information disclosed in the performance forecasts affecting the expectation of investors, this article will also excluded the firm that released quarterly performance forecasts reports from sample.

3. Empirical Results

3.1. The Impact of Market Scale, Relative Value, and Profitability on the Abnormal Returns of Stocks

Taking the listed companies in Chinese A-share market as our sample, focusing on the released quarterly reports at the third quarter of 2017, applying the C-Lasso algorithm that impose penalties on the factors relative value and profitability when running the regression of equation (1), the result of classification is shown in the Table 1.

The listed companies in the sample are divided into two groups, A and B. Compared with the ordinary OLS estimation results, the statistical significance level of the factor SMB has increased significantly (t value increased from 5.50 to 110.04 in group A and 29.80 in group B), the estimated coefficient value (size-return risk elasticity) has increased from a decile number to a value of one, and the estimated coefficient of size-return elasticity of companies in group A is higher than that of companies in group B nearly 30%. Compared with companies in group B, listed companies in group A has a smaller market capitalization.

The estimated coefficients results show that the profitability of companies in group A is relatively stable. The estimated coefficient of RMW for companies in group A (profit-return risk elasticity) is 0.582, which is much higher than -0.063 of companies in group B. The higher profit-return elasticity coefficient indicates that most of the returns comes from the company profitability.

The relative value level of companies in group B is relatively high. The estimated coefficient of VMG for companies in group B (value-return risk elasticity) is 0.648, which is much higher than -0.013 of companies in group B. The significant value-return elasticity coefficient shows that the returns of stocks mostly come from the changes in the company's relative value level.

Table 1. The C-Lasso estimator of Multi-factor model

Factor	Unclassified	Group A	Group B
MKT	0.605*** (130.10)	0.607*** (124.18)	0.579*** (42.51)
SMB	0.050*** (5.50)	0.889*** (110.04)	0.687*** (29.80)
VMG	0.522*** (74.91)	-0.013 (-1.34)	0.648*** (26.98)
RMW	0.871*** (113.53)	0.582*** (79.09)	-0.063** (-3.25)

Notes:

(1) The values in parentheses are standard errors of parameters.

(2) ***, **, and * represent the significance levels at 1%, 5%, and 10%, respectively.

Employing the market transaction data of stocks within estimation window to run regression equation (1), Figure (1) shows the distribution of the estimated intercepts of each company under the least square algorithm. We could find that the distributions of the estimated intercepts of companies in Group A and Group B both are similar to the normal distribution. And the expected values of the distributions are located near zero, that is, the four-factor model (1) constructed in this paper explains the changes in stocks returns well. At the same time, corporate heterogeneity are characterized by differentiated risk elasticity.

Table 2. The estimated coefficients of model (2)

Factor	Unclassified	Classified
Intercept	-0.003*** (-15.66)	-0.003*** (-15.37)
Group B		0.000 (1.488)
VMG	-0.079*** (-5.62)	-0.104 (-7.19)
RMW	0.006 (-0.395)	0.020 (-1.22)
VMG × Group B		0.246*** (4.81)
RMW × Group B		0.139*** (2.83)

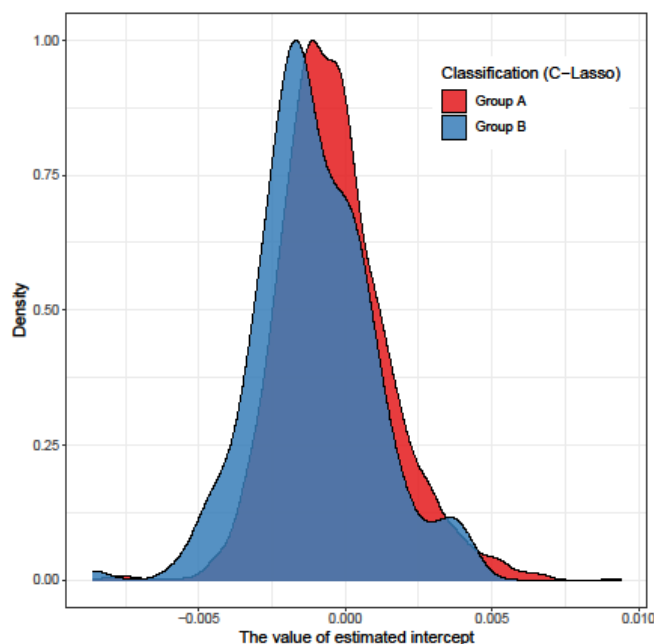


Figure 1. The distribution of the estimated intercepts of grouped stocks

3.2. The Path of Cumulative Abnormal Returns of Grouped Stocks

As shown in figure (2), at the latter part of the event window, the cumulative abnormal return of companies in group A is basically gone back to zero, but the cumulative abnormal return of companies in group B is about a positive number of 1%. So, we draw the following conclusion: the release of quarterly earnings reports will bring positive cumulative abnormal returns to listed firms with a high level of relative value and large market capitalization, which will further increase the size of market value of these companies. As for those companies with strong profitability and small or medium size, their cumulative abnormal return would approached to zero within the event window.

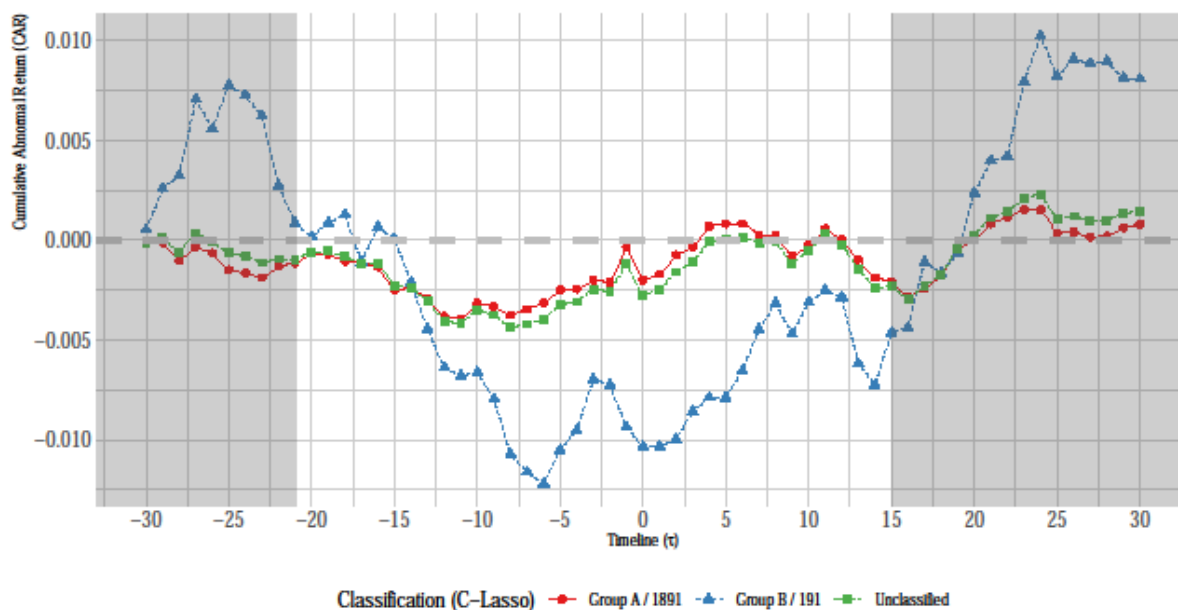


Figure 2. The path of expected cumulative abnormal returns of portfolios

4. Conclusion

This paper takes the abnormal returns of listed firms in Chinese A-share market during the period of quarterly earnings report released date as the research object, and employ the risk factors constructed by the changes in corporate accounting conditions between two quarters to explain the fluctuations of the market returns of stocks within the event window. The main conclusions are as follows.

Firstly, the four risk factors model, composed of explanatory variables such as market risk, capitalization size risk, relative value risk, profitability risk, etc., could perfectly explain the changes in the returns of stocks in the Chinese A-share market. The estimated values of model intercept is close to zero.

Secondly, according to the accounting indicators as profitability and relative value, listed firms in Chinese A-share market could be divided into two groups. And listed companies with small and medium capitalization scale and strong profitability could be grouped into a group, listed companies with large market capitalization scale and high level of relative value could be grouped into another group.

Finally, the cumulative abnormal return of portfolios within the event window approached to the value of zero, but its trends between heterogeneous companies were different. Specifically, listed companies with small or medium market size and strong profitability have a slower adjustment of abnormal returns, and large listed companies with high level of relative value are likely to obtained a positive cumulative abnormal return, that is, investors in the Chinese A-share market prefer high value and stable profitability stocks.

References

- [1] Ando T, Bai J. 2014. Asset pricing with a general multifactor structure[J]. *Journal of Financial Econometrics*, 13(3): 556-604.
- [2] Ball R, Kothari S P. 1991. Security returns around earnings announcements[J]. *Accounting Review*: 718-738.
- [3] Bernard V L, Thomas J K. 1990. Evidence that stock prices do not fully reflect the implications of current earnings for future earnings[J]. *Journal of Accounting and Economics*, 13(4): 305-340.
- [4] Bessembinder H, Zhang F. 2013. Firm characteristics and long-run stock returns after corporate events[J]. *Journal of Financial Economics*, 109(1): 83-102.
- [5] Daniel K, Titman S, Wei K J. 2001. Explaining the cross-section of stock returns in Japan: Factors or characteristics? [J]. *The Journal of Finance*, 56(2): 743-766.
- [6] Easley D, O'hara M. 1987. Price, trade size, and information in securities markets[J]. *Journal of Financial Economics*, 19(1): 69-90.
- [7] Fama E F, French K R. 1993. Common risk factors in the returns on stocks and bonds[J]. *Journal of Financial Economics*, 33(1): 3-56.
- [8] Fama E F, French K R. 2015. A five-factor asset pricing model[J]. *Journal of Financial Economics*, 116(1): 1-22.
- [9] Hand J R. 1989. 1988 competitive manuscript award: Did firms undertake debt-equity swaps for an accounting paper profit or true financial gain? [J]. *Accounting Review*: 587-623.
- [10] Mikhail M B, Walther B R, Willis R H. 1997. Do security analysts improve their performance with experience? [J]. *Journal of Accounting Research*, 35: 131-157.
- [11] Sen S, Bhattacharya C B. 2001. Does doing good always lead to doing better? consumer reactions to corporate social responsibility [J]. *Journal of Marketing Research*, 38(2): 225-243.